An Inaugural Essay on The Sedative effects of Cold

for the degree of Doctor of Medicine

by

Thomas Nelson of Virginia

1810

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An Essay &c

"Both Reason & Experiment pronounce Cold to be a debilitating Agent"—

To prove this position is the object of the following essay — That the subject is important & worthy serious investigation will be admitted by all who are embark'd in the practice of the Medical profession — The justly celebrated professor of the Institutes & practice of Medicine in the University of Pennsylvania says "That next to man Cold is the greatest Enemy to man" — Altho the Doctor supposes Cold to be one of the cheif sources of Disease & thinks it has been & promises to be a still more valuable Agent in the cure of Disease — to ascertain then its operation upon the Animal system is of the highest practical Utility — these circumstances stand to apologize for this effort to ascertain its <u>direct</u> operation

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That Cold is matter or that there exists such a
ing as actual frigorific particles appears to have
n an opinion entertaind by Mushenbroek &
any others – The ground of this doctrine was, the
nsation which it produces being as painful as
from a positive body, & the circumstance of
e or congealed water occupying more space than
hen in a liquid state – Water they imagined
be naturally or essentially fluid & to have
s fluidity in consequence of the round figure
fine polish of its particles – They therefore
ought that to give it solidity, some powerful
ent was necessary, as frigorific atoms of angular
ointed & wedgelike forms, which being intro=
ced among those of the Water, might entangle
fix them one with another – Upon these two
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facts alone has the belief of the existence of frig=
ific particles been founded, with most of those
who have adopted the opinion — But this is
a doctrine which has but few if any abettors
at the present day — It now appears to be
granted by a great majority of Chymists that
Cold is nothing but a privation, an absence of
matter of Heat, that as silence is the ab=
sence of Sound & Darkness the absence of Light,
so Cold the absence of Heat — To support
this doctrine there have been many arguments
& experiments advanc'd, which would be as
unnecessary as foreign to the special object
of this essay to relate — It being then granted
that Cold is the mere absence of Heat, I shall
proceed to consider its direct & immediate
effects

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effects upon the Animal system —
"Whatever directly reduces the excitement of the
system is properly call'd a Sedative" — This is
position so well establish'd I think myself
fe in making it the groundwork of my argu=
ents — Independant of facts which I am
resently to relate I would conclude, (if I
nk logically) from the circumstance of
old being a mere absence of Heat, that it
ust act as a Sedative — We know that Heat
one of the most powerful stimuli to, then
hat is more natural than to suppose the
bstraction of it would have a Sedative op=
ation upon, the Animal System — Is not the
lood a Stimulus, & does not the abstraction
f it from, reduce the excitement of, the system
not this analogy a fair one? But this
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is mere abstract reasoning & I shall go on to speak of facts which may be considered more satisfactory —

That Cold reduces the excitement of the system infer 1st From experiments which have been made (with a view to this subject) on the Human body in health & 2dly From its effects on the Human body in disease — 'Tis true that the experiments which have been made on the healthy body with a view to this subject have produced different results — Dr. Currie of Liverpool, the great champion of the Doctrine of the Stimulant Sensation of Cold, instituted a course of experiments which resulted to the confirmation of this opinion — But Dr. Klapp of Philadelphia (whose judicious experiments I shall presently notice) very correctly remarks that

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that Dr. Currie's mode of experimenting was not
altogether free from objection - That the subjects
of his experiments were nearly or quite im-
ersd & in some instances plung'd suddenly
into cold water, & the state of their pulse was
afterwards taken as an indication of the change
of excitement - In either case the transition
from so rare to so dense a medium acting
mechanically on the system, & the exertions
of shivering & swimming render it a doubt-
ful matter whether the accelerated pulse
& the other symptoms of increas'd action
are to be attributed to cold seperately
or to these collateral agents — Dr. Klapp
has conceived & executed a course of exper-
iments, which are less exceptionable & there-
fore more to be depended on - Altho I have
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no doubt either of the accuracy of them experiments or the faithfulness of their detail, I did intend for my own private satisfaction to have repeated them, but the time allowed for the preparation of my Thesis being short & my engagements being numerous I am deprived of an opportunity — I shall now relate one or two of Dr. Klapp's experiments in his own words —

Experiment 1st "On due examination my pulse was ascertained to afford 74 pulsations per minute as to quickness & fulness it was as usual my feet & legs were then immersed in a bucket of cold water, a few degrees above the freezing point — The Gentleman who gave me assistance was very cautious & particular in noticing every change which

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ncurrid in the pulse, & the following is an exact
ccount of his report – Two minutes after
he immersion the pulse beat 63 strokes the
minute; 3 minutes 62; 4 minutes 62; 6 minutes
4; & 7 minutes from the commencement
f the immersion it afforded 69 pulsations
he minute – As the water was now acquiring
warmth, the experiment was discontinued –
he pulse was observid not only to become
less frequent but it lost much of its force
fulness" – Does not this experiment of
Dr. Klapp's incontestibly prove that the
irect operation of cold is that of a sedative
n this case no objection ought to be made
o the immersion of his feet into water –
f any can be made it is that the water
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have some mechanical action on the part immersd, but this would necessarily have been stimulating & of course so far from invalidating the result would corroborate it — do we not now see why Dr. Currie's Experiments resulted differently from those of Dr. Klapp? is it not to be attributed to the mechanical action of the denser medium in which the subjects of the former experiments were nearly or totally immersd, or from their muscular exertions, or from both? It has however been said that it is only high degrees of cold that will prove debilitating & that a moderate degree invigorates the blood-vessels Muscles & every other part of the system — To obviate this objection he made the following experiment "J. E's pulse

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after due examination; was found to beat
70 regular & usually full strokes per minute
He then walked into another room, with
no clothes on, except a loose shirt; & on the
5th minute of his exposure to an atmosphere
of the temperature of 50° of Fahrenheit, his
pulse beat 60 strokes; on the 18th 58, & on the
9th minute it afforded 59 pulsations —
From the commencement to the end of the
experiment the pulse was sensibly dimin
ish'd in force & fulness" — "This experiment
proves that even a moderate degree of cold
has a direct sedative effect on the Human
system — Dr. Klapp also made some ex=
periments proving that cold applied
to the pulmonary system had the same
debilitating effect as when applied to the
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Cuticular, or both — These, together with some experiments made & detailed by Dr. Rush, appear to me to be sufficient to prove that Cold is a direct Sedative to the Human body in health —

I shall now proceed to the 2d part of my argument Viz Cold is prov'd to be a Sedative by its effects upon the Human body in Disease — The operation of Cold being of a doubtful nature; has rendered its use in disease difficult & dangerous — that it has prov'd salutary in some & injurious in other cases of disease will not be disputed — And it is the chief object of this part of my subject to ascertain in what grades of Disease it has had these different effects — Dr. Currie of whom

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have already spoken, in his observations on
old in different diseases, says "To apply cold
with success in Inflammatory diseases, it
ems to me probable that the sensation which
attends it should be as much as possible
moderated, & that the application should be
regulated as to ensure the effectual re-
duction of the temperature of the patient
If this be the case, the sudden & temporary
effusion of cold water, so advantageous in
Typhus will not be salutary, or indeed
safe in inflammatory fever. In which it
appears to me that the patient, if cold is
employed, should sink himself slowly in
the cold bath, continuing the immersion
for such a duration as the state of his heat
the pulsation of his heart & arteries
will admit" - He goes on to say "By
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the experiments which I detail'd formerly, it ap=
pears that under continued immersion in Cold
water, the sensation of Cold speedily abates &
that the frequency of the pulse is in a most stri=
king & uniform manner reduced" He then
observes "And though in pure synocha the Cold
bath would probably be advantageous yet se=
rious objections may present themselves against
employing it in Plenritis & Pneumonia, ob=
jections which I do not think insurmount=
able, but which experience neither enables me
invalidate or to strengthen — In Phrenitis,
Gastritis Enteritis &c especially in their dis=
tinate forms I think immersion in the Cold
bath ought to be hazarded" — Then it appears
some are great concessions from one who
so strenuously advocated the stimulant
operation of Cold — He not only admits that
Cold

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Cold is an excellent application in local in-
flammation & recommends a trial of it in
inflammatory fevers, but in another part
of his work, speaks of its inefficacy & even
injurious tendency in fever of a low chronic
or Typhus type — Upon what principle &
how does Dr. Currie recommend the use of Cold
in disease of too much action & forbid it in
disease of too little action? Does he not
under the same circumstances recommend
& forbid Bloodletting? And does he not
consider Bloodletting a Sedative remedy?
The salutary effects however of Cold in high
morbid action is not only admitted by
Currie but by almost all practitioners
of Medicine — Who at the present day
would refuse to expose to a Cool or even a
Cold air a patient in the Inflammatory
Stage

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stage of small pox, or who would refuse to apply cold water or Ice to the Head in Apoplexy? —

But some have infer'd that Cold is stimulating from the circumstance of the glow of heat which is felt by a person just emerg'd from a cold bath — This argument it appears to me satisfactorily refuted by Dr. Williamson of Baltimore in his observations on Cold, publish'd in the Philadelphia Medical Museum he says it is owing to heat & not to cold. That the cold bath raising the excitability, & the atmosphere being of a higher temperature from the water, acts with redoubled force, & in this way the redness of the skin & glow of heat are produc'd —

It has been infer'd also that Cold is stimulant from the circumstance of its acting in

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in some cases as a Sudorific & in some as a
cathartic when applied to the Skin - I think
these examples so far from favouring the
opinion of its being a Stimulus, tend greatly
to confirm the fact I contend for - Do we
not know that the very cases in which Cold
will have these effects other sedative rem=
edies as Bloodletting &c will have the same
A case is related by Dr Rush, where the patient
was so warm that a sweat could not be
produced by the common Sudorifics, but
a sponge being immersed in cold water,
a copious Diaphoresis appeared on every part
to which it was applied - Now does not
this manifestly shew that it is its sedative
not its Stimulant operation which pro
duced this effect - Here the system was
labouring under too much Stimulus, it was
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necessary to reduce it to that degree at which the Blood vessels would take on the action necessary for a Diaphoresis — This degree Dr. Rush very properly, I think, calls the Sweating point. I have little doubt but what Blood letting would have had the same effect —

Did time permit I might go on to state the reasons which have induced me to adopt the opinion that Cold is a Sedative — But not the multiplicity of reasons which convinces the mind of any fact — The testimony even <u>one</u> <u>creditable</u> <u>witness</u> is sufficient to establish the point —

To my own feelings I would be committing an act of injustice, not to take this opportunity of rendering my acknowledgements to the Professors for the <u>Instruction</u> & friendly attention I have received from each of them —

— Finis —

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